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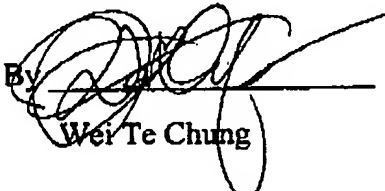
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**CERTIFICATE**

I, Wei Te Chung, being a patent agent (Reg. No. 43,325), certify that I am well proficient in both the English and Chinese languages, and that the attached translation correctly corresponds to the Taiwan priority document of the aforementioned application, according to my belief.

By   
Wei Te Chung

Date

Jan 12, 2006

## Translation of Taiwan Patent Application No.92204909

### Title

### Clip For Heat Sink

#### 【Abstract of the Invention】

A clip for securing a heat sink to a motherboard includes a main body, a buckling piece and an operating piece. The main body includes a pressing part, a first clamping leg extending downwardly from an end of the pressing part, and a copulae extending horizontally from an opposite end of the pressing part. The buckling piece includes a second clamping leg corresponding to the first clamping leg. A connecting part is defined atop the buckling piece to extend through the copulae. The connecting part extends a spring tab therefrom. The operating piece includes a pressing portion and a rotating part. The rotating part is an eccentric structure and pivotably connects with the connecting part. Rotating the operating piece, the eccentric structure rotates and presses the copulae.

#### 【Background of the Invention】

With High integration and complication development of electronic device especial CPU (central processing unit), large amounts of heat are produced during run of the electronic device. Therefore, a heat sink adopted for dissipating heat of the electronic device increases in volume and weight accompanying the development of the electronic device. A clip adopted for securing the heat sink to the electronic device needs to be enhanced in clamping force and strength. Accordingly, preferably securing

the heat sink to the electronic device is an urgent problem to be solved.

Patents US 6,343,015 B1 and Taiwan No. 270560 both disclose a typical clip for heat sink. Referring to FIG. 5, the clip comprises a pressing part 10, two flexible arms 12 extending slantwise upwardly from two ends of the pressing part 10, and two clamping arms 14 depending from distal ends of the two flexing arms 12. Two openings 16 are defined in appropriate position of each of the two clamping arms 14. An upper one of the two openings 16 has a tab 18 extending upwardly from a bottom edge thereof, for a tool or finger of operator working thereon. A low one of the two openings 16 is for clamping a tenon 19 of a socket. However, in assembly or disassembly, if the tab 18 is pulled by finger of the operator, which is laborious and even more hurts the finger, while if the tab 18 is pulled by a driver, which further use other tools and results in the assembly or disassembly more fussy, and even more the tools scrape the motherboard or other electronic devices, it is dangerous to operate.

Furthermore, Taiwan Patent No. 511864 discloses a pivoting clip for heat sink. Referring to FIG. 6, the clip comprises a first clipping body 30 and a second clipping body 50. The first clipping body 30 comprises a pressing part 32 at a centre thereof, two flexible arms 34 extending upwardly and outwardly from two ends of the pressing part 32, a pivoting seat 36 formed at an distal end of one of the two flexible arms 34, and a first clasp 38 cranked downwardly from an distal end of the other of the two flexible arms 34. The second clipping body 50 comprises a pivoting ear 52 pivotably connecting with the pivoting seat 36 of the first clipping body 30 via a pivoting pole 70, a second clasp 54 cranked from a bottom end of the second clipping body 50, and a handle 56 formed atop the second clipping body 50. In assembly, the first clasp 38 of the first clipping body 30

disposed in a clamping hole of a retention module supporting the heat sink. Pressing the handle 56 of the second clipping body 50, the second clasp 54 rotates and clasps another clamping hole of the retention module. Therefore, the heat sink is secured to the electronic device. However, the second clipping body 50 of the clip is integrally formed by a metal sheet, and has furthermore the pivoting ear 52 formed at the center thereof, which in assembly results in that it is laborious to press the second clipping body 50 downwardly, and when pressing the handle 56, the second clasp 54 rotates, which is difficult for the second clasp 54 to correspond to the clamping hole of retention module. Therefore, it is inconvenient for assembling operation.

What is needed for the present invention, therefore, is how to provide a clip which conveniently and stably secures a heat sink to an electronic device.

#### **【 Features of the Invention 】**

Accordingly, an object of the present invention is to provide a clip for conveniently and stably securing a heat sink.

In order to achieve the object set out above, a clip for securing a heat sink to a motherboard includes a main body, a buckling piece and an operating piece. The main body includes a pressing part, a first clamping leg extending downwardly from an end of the pressing part, and a copulae extending horizontally from an opposite end of the pressing part. The buckling piece includes a second clamping leg corresponding to the first clamping leg. A connecting part is defined atop the buckling piece to extend through the copulae. The connecting part extends a spring tab therefrom. The operating piece includes a pressing portion and a rotating

part. The rotating part is an eccentric structure and pivotably connects with the connecting part. Rotating the operating piece, the eccentric structure rotates and presses the copulae.

The clip of the present invention has merits as follows:

The buckling piece and the operating piece are designed separately, and are pivotably assembled together, therefore, a clamping hole of the buckling piece can engage with a retaining member firstly, and then pressing the operating piece completes securing the heat sink. Additionally, the eccentric structure has different radiuses, and presses the pressing part of the main body to deform to thereby produce clamping force toward the heat sink. Furthermore, in assembly, only friction moment between the eccentric structure and copulae needs to be overcome, thus, pressing force acting on the operating piece is small, therefore, it is convenient and labor-saving to operate.

#### **【preferred Embodiment of the Invention】**

Referring to FIGS. 1 and 2, a clip of the present invention comprises a main body 20, a buckling piece 40 and an operating piece 60.

The main body 20 comprises a substantially V-shaped pressing part 22. The pressing part 22 has two sides thereof folded downwardly to form two flanges 24 for enhancing strength of the pressing part 22. The pressing part 22 has an end thereof extending downwardly to form a first clamping leg 26 with a first clamping hole 27 defined therein, and an opposite end thereof extending horizontally to form a copulae 28 with a through hole 29 defined therein.

The buckling piece 40 comprises a connecting part 42. The

connecting part 42 has a top thereof extending two reinforce ribs 44 at two opposite sides thereof. A distance between the two reinforce ribs 44 is equal to a length of the through hole 29 of the main body 20, thereby the connecting part 42 passing through the through hole 29. Each of the two reinforce ribs 44 defines a pivoting hole 46 therein. A second clamping leg 47 extends from a bottom end of the connecting part 42. The second clamping leg 47 defines a second clamping hole 48 corresponding to the first clamping hole 27 of the main body 20. A spring tab 49 extends from an appropriate position of the buckling piece 40, for preventing the connecting part 42 from extending out of the through hole 29 of the copulae 28.

The operating piece 60 comprises a rotating part 62 which is an eccentric structure. The eccentric structure comprises two spaced cam-shaped sidewalls 64. A distance between the two sidewalls 64 is widthwise to a width of the connecting part 42 of the buckling piece 40. A pivoting hole 66 corresponding to the pivoting hole 46 of the connecting part 42 is defined in each of the two sidewalls 64. A bolt 80 is fitted in the pivoting hole 46, 66. Therefore, the operating piece 60 and the buckling piece 40 are connected together. The operating piece 60 has a pressing portion 68 formed on the rotating part 62, for pressing the clip to secure the heat sink.

It can be understood, the buckling piece 40 and the operating piece 60 are connected together via other means such as a pivoting post fitted in the pivoting holes, excepting for the bolt 80.

Referring also to FIG. 3, in assembly of the clip, the connecting part 42 of the buckling piece 40 passes through the through hole 29 of copulae 28 of the main body 20, simultaneously, the bolt 80 is fitted in the pivoting holes 66 of the rotating part 62 and the pivoting holes 46 of the connecting part 42.

Therefore, the clip is assembled. Here, the rotating part 62 rests on the copulae 28.

Referring also to FIG. 4, in assembly, the main body 20 of the clip is received in a groove 92 of the heat sink 90. The clamping hole 27 of the first clamping leg 26 of the buckling piece 20 is engaged with a tenon 72 of a retention member 70. The second clamping leg 47 of the buckling piece 40 is located at an appropriate position. Then, the pressing portion 68 of the operating piece 60 is pressed, the rotating part 62 rotates, until the copulae 28 of the main body 20 abuts against the spring tab 49 of the buckling piece 40, thereby finishing securing the heat sink. In the assembly operation, the rotating part 62 has different radiuses, and presses the pressing part 22 of the main body 20 to deform to thereby produce large clamping force toward the heat sink. Furthermore, only friction moment between the eccentric structure and the copulae 28 needs to be overcome, thus, pressing force needed is small. Additionally, the spring tab 49 of the buckling piece 40 prevents an excessive displacement from being produced between the connecting part 42 and the main body 20 to thereby prevent excessive deform of the main body 20, i.e., clamping force of the clip toward the heat sink can not be excessive, which protects the electronic device against damaged due to excessive force acted thereon.

It can be understood, the first and second clamping holes 27, 28 can be replaced by two clasps, correspondingly, the tenons 72 of the retention member 70 can be replaced by clamping holes.

According to the foregoing description, the present invention is patentable, and thus is submitted for a patent legally. However, the foregoing description is only one embodiment of the present invention, any equivalent basing on the spirit of the present invention is covered by the

following claims.

### **【Description of the Drawings】**

FIG. 1 is an assembled, isometric view of a clip of the present invention.

FIG. 2 is an exploded, isometric view of the clip of the present invention.

FIG. 3 is an exploded view of the clip and relevant members of the present invention.

FIG. 4 is an assembled view of the clip and the relevant members of the present invention.

FIG. 5 is an isometric view of a conventional clip.

FIG. 6 is an isometric view of a conventional pivoting clip.

### **【Labels of the Main Components】**

main body	20	pressing part	22
flange	24	first clamping leg	26
clamping hole	27, 28	copulae	28
hole	29	buckling piece	40
connecting part	42	reinforce rib	44
pivoting hole	46, 66	second clamping leg	47
spring tab	49	operating piece	60
rotating part	62	sidewall	64
pressing portion	68	retention member	70



tenon	72	bolt	80
heat sink	90	groove	92

**Claims:**

**1. A clip for securing a heat sink to a motherboard, comprising:**

**a main body comprising a pressing part, a first clamping leg extending downwardly from an end of the pressing part, and a copulae extending horizontally from an opposite end of the pressing part;**

**a buckling piece fitting through the copulae of the main body, comprising a second clamping leg corresponding to the first clamping leg of the main body, and a connecting part formed at a top thereof;**

**an operating piece comprising a pressing portion and a rotating part which is a eccentric structure connecting with the connecting part of the buckling piece; and**

**wherein, the connecting part of the buckling piece pivotably connects with the rotating part of the operating piece together, and the rotating part of the operating piece presses the copulae of the main body when the rotating part rotates.**

**2. The clip as described in claim 1, wherein the copulae defines a through hole therein.**

**3. The clip as described in claim 2, wherein the connecting part extends beyond the through hole of the copulae and connects with the rotating part.**

**4. The clip as described in claim 3, wherein the connecting part has a spring tab formed thereon.**

**5. The clip as described in claim 1, wherein the pressing part is V-shaped, and has two flanges extending from two opposite sides thereof, respectively.**

**6. The clip as described in claim 1, wherein the connecting part has two**

reinforce ribs extending from two opposite sides thereof, and pivoting holes defined in the reinforce ribs.

7. The clip as described in claim 6, wherein the eccentric structure is a cam.

8. The clip as described in claim 7, wherein the cam is formed from two sides of the rotating part.

9. The clip as described in claim 8, wherein the connecting part and the rotating part are connected by a bolt.

10. The clip as described in claim 8, wherein the rotating part forms posts fitting in the pivoting holes of the connecting part.

11. The clip as described in claim 1, wherein the connecting part forms posts thereon.

12. The clip as described in claim 11, wherein the rotating part defines pivoting holes therein for receiving the posts.

13. The clip as described in claim 1, wherein the first and second clamping legs define clamping holes therein, respectively.

14. The clip as described in claim 1, wherein the first and second clamping legs form clasps thereon, respectively.

15. A clip for a heat sink comprising:

a main body comprising a pressing part, a first clamping leg extending downwardly from an end of the pressing part, and a copulae extending horizontally from an opposite end of the pressing part, the copulae defining a through hole therein;

a buckling piece comprising a second clamping leg corresponding to the first clamping leg of the main body, and a connecting part formed at a top thereof, the connecting part being capable of extending through the through hole of the copulae, the connecting part having a spring tab formed thereon;

an operating piece comprising a pressing portion and a rotating part which is a eccentric structure pivotably connecting with the connecting part; and

wherein, the connecting part connects with the rotating part together, and the rotating part presses the copulae when the rotating part rotates.

16. The clip as described in claim 15, wherein the eccentric structure is a cam.

17. The clip as described in claim 16, wherein the cam has pivoting holes defined therein.

18. The clip as described in claim 17, wherein the connecting part has two reinforce ribs with pivoting holes defined therein extending two opposite sides therefrom, and wherein the connecting part and the rotating part are connected by a bolt engaged in the pivoting holes of the reinforce ribs and the cam.

19. The clip as described in claim 15, wherein the pressing part is V-shaped, and extends two flanges from two opposite sides thereof.

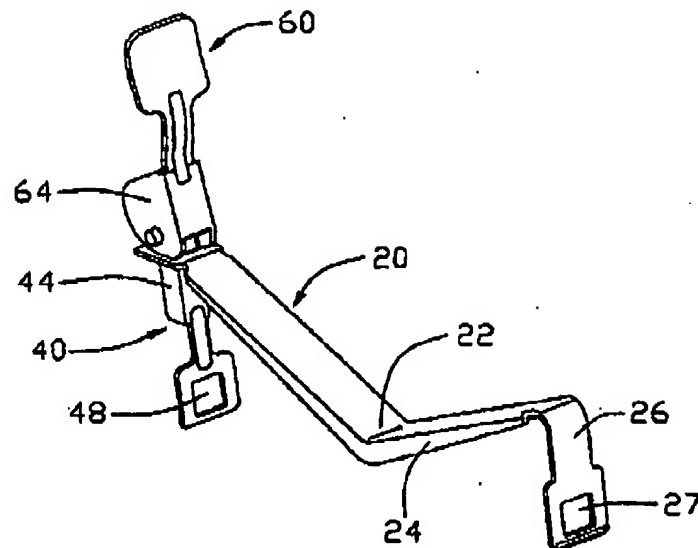


FIG. 1

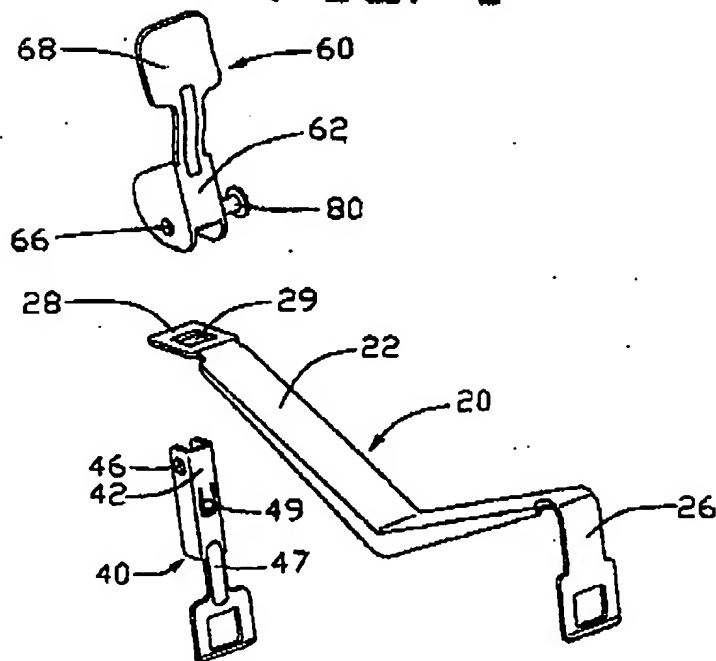


FIG. 2

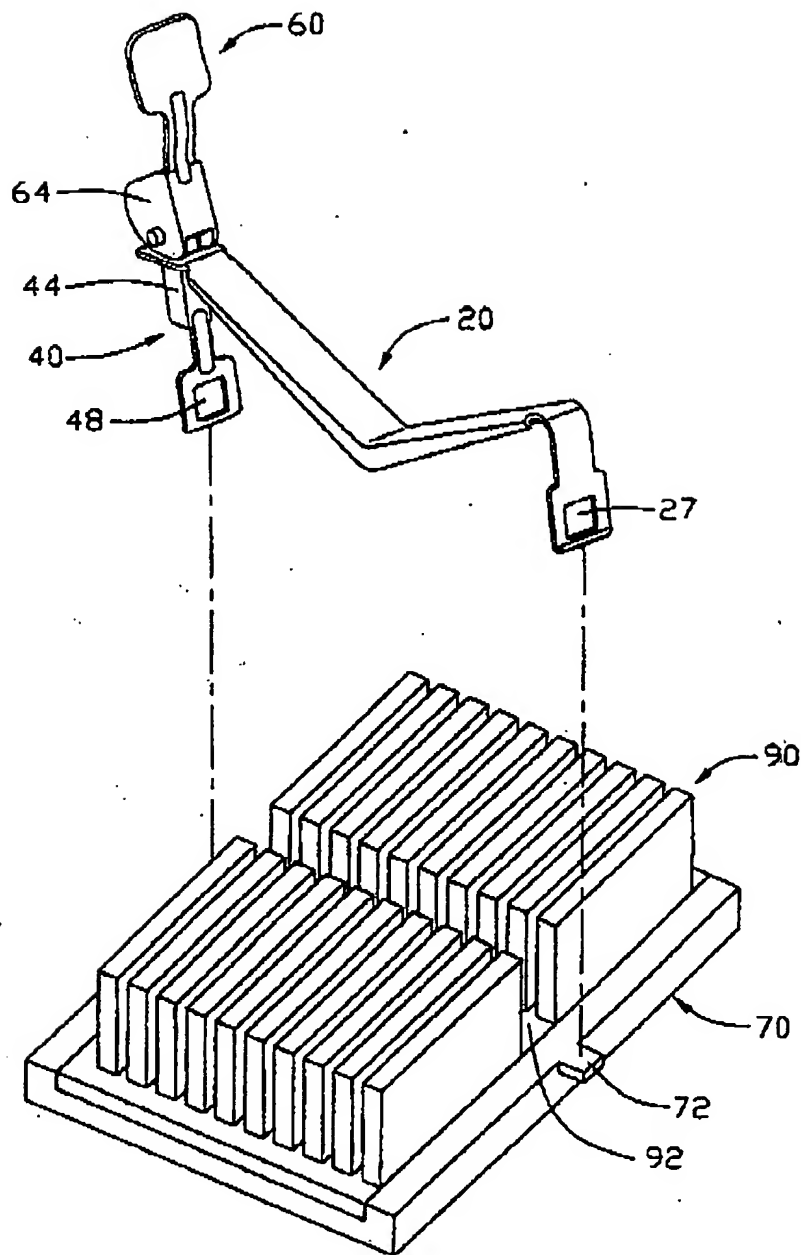


FIG. 3

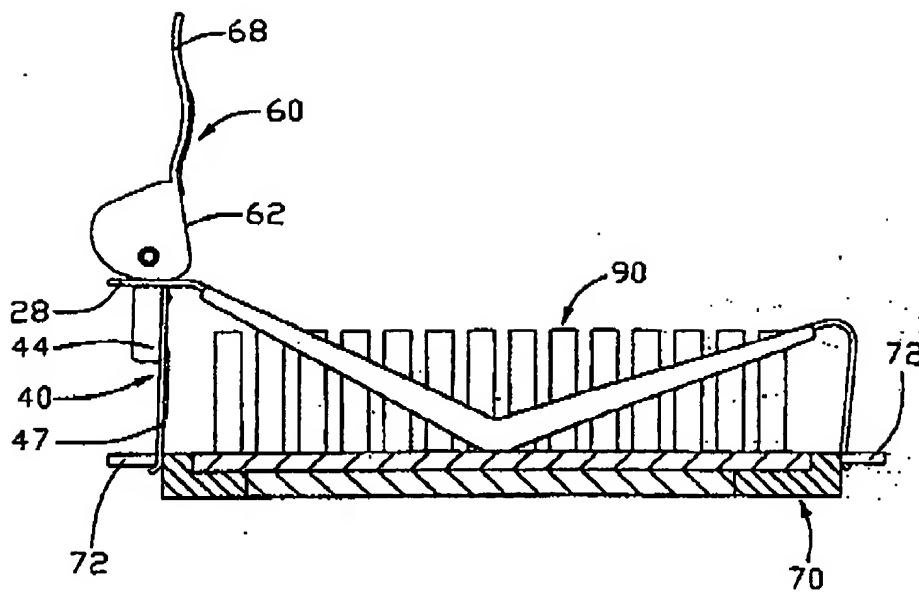


FIG. 4

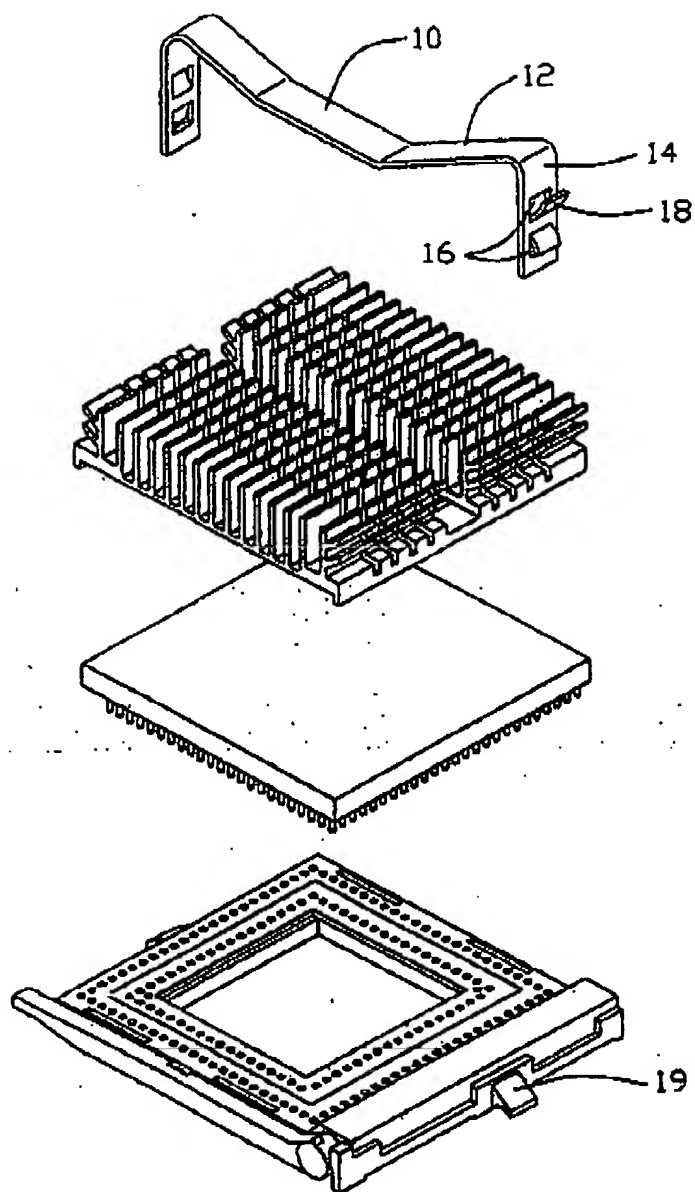


FIG. 5



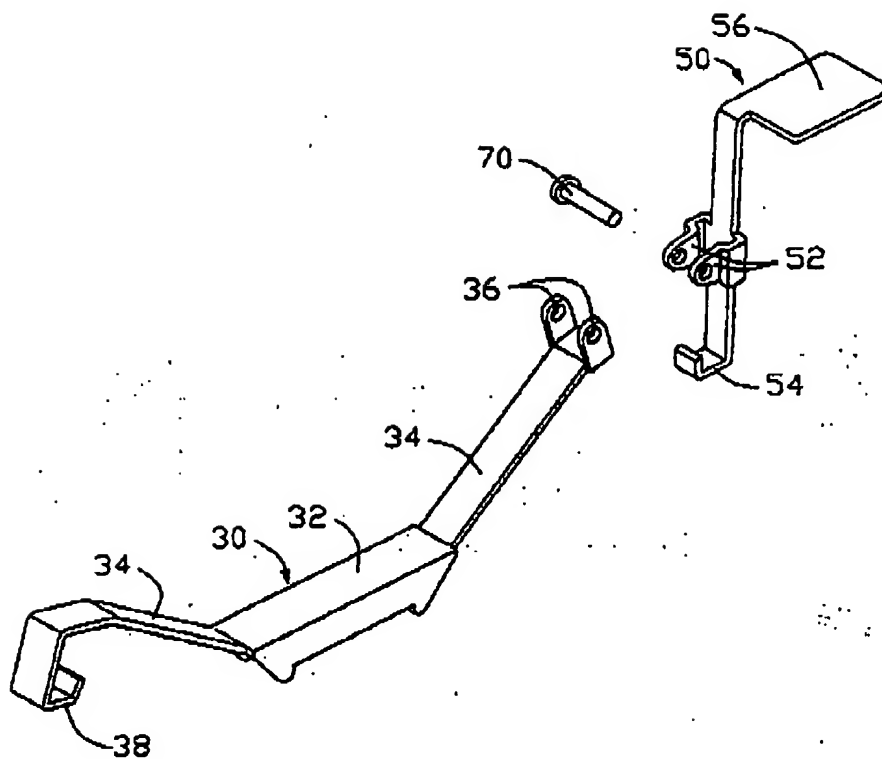


FIG. 6

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